AD-E750264

AD A120166

DTIC FILE COPY

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: 80-1	2. GOVT ACCESSION NO.: AD-A120 166	3. RECIPIENT'S CATALOG NUMBER:
4. TITLE (and Subtitle): Development of a Methodology for Assessing Daily Experiences		5. TYPE OF REPORT & PERIOD COVERED: Technical Report
		6. PERFORMING ORG. REPORT NUMBER:
7. AUTHOR(s): Arthur A. Stone; John M. Neale		8. CONTRACT OR GRANT NUMBER(s): N00014-77-C-0693
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Department of Psychology, S.U.N.Y. at Stony Brook, Stony Brook, N.Y. 11794		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: NR 170-861
11. CONTROLLING OFFICE NAME AND ADDRESS: Organizational Effectiveness Research Programs, Office of Naval Research (Code 452), Arlington, VA 22217		12. REPORT DATE: January, 1980 13. NUMBER OF PAGES: 77
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report): Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

DTIC ELECTE OCT 7 1982 D H

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Life events
Daily questionnaire
Cognitive appraisal
Stress
Mood

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Serious shortcomings in existing instruments for assessing life events coupled with the inadequacy of retrospective designs in evaluating hypotheses concerning the causal impact of experience led to the development of a new methodology for assessing daily occurrences. First, using diary recordings a sample supplied a pool of events. These events were then categorized, arranged in outline form and linked to a set of dimensions used to rate psychological reactions to the events which were experienced. This initial instrument was pilot-tested for two weeks with husbands (targets) reporting their own

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-LF-014-6601

Unclassified
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

82 10 08 033

20. (continued)

experiences and their wives completing the form as observers. The instrument allowed husbands to adequately record their daily experiences and several predictions (e.g., desirable events related directly to "positive" moods) were confirmed. Nonetheless, husband-wife concordance was low and prompted an additional study. Several revisions based on participants' comments and our own experience with the initial form were made and more extensive training was provided to the participants. Additionally, some subjects received phone calls on selected days to allow us to better understand the reasons for low husband-wife concordance. The major source of discordance was that information known to the target was unavailable to the observer. Thus, the instrument appears to be a convenient way of collecting accurate data on daily experience.

Development of a Methodology for Assessing Daily Experiences

Arthur A. Stone[1]

Long Island Research Institute
and
Department of Psychiatry and Behavioral Science
State University of New York at Stony Brook

and

John M. Neale

State University of New York at Stony Brook

Running head: Assessing Daily Experience

Abstract

Serious shortcomings in existing instruments for assessing life events coupled with the inadequacy of retrospective designs in evaluating hypotheses concerning the causal impact of experience led to the development of a new methodology for assessing daily occurrences. First, using diary recordings a sample supplied a pool of events. These events were then categorized, arranged in outline form and linked to a set of dimensions used to rate psychological reactions to the events which were experienced. This initial instrument was pilot-tested for two weeks with husbands (targets) reporting their own experiences and their wives completing the form as observers. The instrument allowed husbands to adequately record their daily experiences and several predictions (e.g., desirable events related directly to "positive" moods) were confirmed. Nonetheless, husband-wife concordance was low and prompted an additional study. Several revisions based on participants' comments and our own experience with the initial form were made and more extensive training was provided to the participants. Additionally, some subjects received phone calls on selected days to allow us to better understand the reasons for low husband-wife concordance. The major source of discordance was that information known to the target was unavailable to the observer. Thus, the instrument appears to be a convenient way of collecting accurate data on daily experience.

Development of a Methodology for Assessing Daily Experiences

Explorations of the association between environmental events and illness mushroomed following the development of Holmes and Rahe's (1967) method of quantifying life stress. They compiled a list of 43 events, the Social Readjustment Rating Scale (SRRS), which subjects rated using Stevens' (1974) magnitude estimation technique. Each event was rated according to the amount of "social readjustment" necessary to accommodate to it compared with the amount of readjustment inherent in getting married (the scaling modulus). The readjustment coefficients were then used to weight scores on the Schedule of Recent Events (SRE), a paper and pencil measure parallel in form to the SRRS used to determine which of the 43 events a subject had experienced. The sum of the SRE, called the Life Change Unit (LCU), was used to predict various measures of psychiatric functioning and physical illness.

Psychiatric, psychological and sociological journals are currently replete with studies using the SRRS/SRE method and the conditions studied range from myocardial infarction to severe depression. Although its success as measured by popularity may be impressive, criticism of the substance and methods of the SRRS/SRE has been plentiful (for example, Andrews & Tennant, 1978; Brown & Harris, 1978; Cline & Chosy, 1972; Dohrenwend & Dohrenwend, 1974; Wershow & Reinhart, 1974).

The sample of events found in the SRRS was not chosen with any particular sampling strategy, other than "common sense," and as such, has been criticized on several accounts. Most of the events are

undesirable and severe; thus, they are not representative of the events most people experience (Dohrenwend, 1974) and a large number of life experiences of potential etiological significance remain unrecorded. The partial overlap between events and symptom measures (e.g., treating "frequent minor illnesses" as an event when somatic dysfunction is the outcome) has been an often cited confound; not unexpectedly, removal of these redundant items lowers the relationship between events and illness (Lehman, 1978).

Event-weighting dimensions or qualities deserve careful attention as they define investigators' notions of stress. But there is no agreed upon set of dimensions or qualities which define stress. Holmes and Rahe used "social readjustment," a quality closely linked to Selye's theoretical position that environmental change defines stress (Selye, 1956). In more recent years, many other qualities of events have been used by life events researchers: desirability (Gersten, Langner, Eisenberg, & Orzeck, 1974); upsettingness (Theorell, 1974); exit versus entrance (Paykel, 1974); degree of control over occurrence (Brown, Sklair, Harris & Birley, 1973); life area (Chiriboga & Dean, 1978); threat (Brown & Harris, 1978); and stressfulness (Stone & Neale, 1978). The strength of association between a dimension and a criterion appears to depend upon which criterion is being predicted. For example, the gain-loss dimension is associated with the onset of depression (Paykel, 1978), yet is more weakly related to other psychiatric conditions. Thus, an important consideration in the assessment of the environment is what dimensions

are to be used to rate experience. It is unlikely that any single dimension exhaustively indexes the concept of stress.

Another issue is the manner in which ratings of experience are obtained. Holmes and Rahe choose to use SRRS ratings from one group of subjects to weight the SRE scores of others. Although there is evidence that SRRS ratings are fairly uniform across various ethnically defined samples (Miller, Bentz, Aponte & Brogan, 1974), there is substantial variation about the mean ratings indicating individual differences within the samples (Wershow & Reinhart, 1974). Moreover, there are instances when individuals' subjective ratings of experiences were more strongly related to outcome than those obtained from the normative samples (Theorell, 1974; Vinokur & Selzer, 1975). But these individual ratings of events were collected after the outcome was known and could have been subject to retrospective distortion possibly in a way which would result in stronger correlations (Dohrenwend, Krasnoff, Askenasy & Dohrenwend, 1978). This issue is not simply a methodological one, but raises the larger question of whether life event inventories are trying to measure "objective" stress which impacts on most people in the same way or "subjective" stress defined by the meaning of the event to the individual. Unfortunately, this distinction has not yet received much attention, but it is crucial to the kinds of questions which studies in the field can answer.

The stability of data gathered by event checklists is also of concern. Rabkin and Struening (1976) report that very few studies have

examined reliability and those that have report generally low test-retest coefficients, within the range of .26 to .90 (Rahe, 1974). Factors affecting the statistics were the testing interval, education of subjects, period during which events were recorded, wording and format of questionnaire, and the associations among life events. Recent studies have shown that recall of major events declines in frequency approximately 5% for each retrospectively - recalled month (Jenkins, Hurst and Rose, 1979; Uhlenhuth, Balter, Lipman & Haberman, 1977).

Finally, the associative relationships found in life events research are difficult to interpret causally (e.g., Brown, 1974). Most of the studies have used either purely retrospective designs or partially prospective designs (in which illness is prospectively assessed but life events are rated for the period prior to the date collection). The retrospective nature of these designs clearly opens the door to the possibility of serious contamination of the data. Although truly experimental studies are almost impossible to conduct in the natural environment, non-experimental prospective research has the potential to untangle the temporal sequence of events and illness.

In response to some of these criticisms, at least two new checklists loosely following the SRRS/SRE method have appeared in the literature. Sarason, Johnson and Siegel's Life Experiences Survey (1978) includes subjects' ratings of a combined desirability - impact scale for events experienced within the past several months. Thus, they abandoned the group approach to event weightings in favor of individual, subjective

ratings of events. On the other hand, the Psychiatric Epidemiological Research Interview developed by Dohrenwend, Krasnoff, Askenasy, and Dohrenwend (1978) was based on a sampling of recent major events for several carefully defined demographically homogeneous groups. These events and those on a previously prepared event checklist were scaled by a group of subjects according to the amount of change they required. The authors used a complex scheme to categorize events according to whether they were stable across groups, within groups, or neither. Furthermore, all events were classified by four judges on several dimensions (probability of occurrence; whether it was a gain, loss, or ambiguous; if it was likely to be a consequence of a psychological condition, physical illness or independent of both conditions; and if the subject was the central figure in the event).

Both of these inventories incorporate significant changes compared to the original SRRS/SRE method. Nonetheless, the basic retrospective method of collecting event data remains unchanged: Subjects still are required to recall their experiences for the past several months. This approach is limiting not only for the reasons discussed earlier (namely, potential biases inherent in the retrospective method), but also because the interplay between individuals and their environment over time is completely ignored. For researchers concerned about the linkage between psychosocial stress and health, the data are as enlightening as describing an entire motion picture by presenting the contents of a single frame.

An alternative to the static model of current life events assessment methods has been proposed by Lazarus and his colleagues (Lazarus, 1966; Lazarus & Cohen, 1977; Lazarus, Cohen, Folkman, Kanner & Schaefer, in press; Folkman, Schaefer & Lazarus, 1979). His transactional model is similar in spirit to an interactive approach, where nonadditivity of effects is the rule, yet is extended to include a time dimension. Dynamic models such as this are a step closer to allowing more complex processes, perhaps even including reciprocal effects across time (Coyne, 1976), to emerge. In its complete form, a transactional approach allows for a redefining of stimuli based on immediately prior experiences. Thus, a single assessment of individuals' event ratings is inadequate within this model. Transactional investigations study behaviors over many points in time and analyses of resulting data call for procedures such as time series and path analysis rather than more traditional methods designed for cross-sectionally collected data (e.g., analysis of variance).

In this paper we will describe the development of a new questionnaire, the Assessment of Daily Experience (ADE), which is designed to allow individuals to record and rate their daily experiences in prospective investigations. The rationale for developing another "life event" assessment is founded on both criticisms of the life event inventories we have previously described and a desire to explore the temporal, interactional processes among life experiences and outcomes. We chose days as the unit of analysis because we felt a thorough

characterization of a 24 hour period was possible without major retrospective-recall bias. With days as the unit of analysis, the specific life events to be rated must include more mundane happenings than are found in previous life event inventories. But over time the major events which have been retrospectively reported on other inventories can still be recorded, probably with greater reliability. Furthermore, there is theoretical and clinical support for the idea that minor daily events are related to illness. These minor, daily events may be subjectively important to individuals for reasons not addressed by the researcher. The meaning of events may be linked to past experience with similar events (many failures with it, for example), to more general personality characteristics (an anxious individual faced with a public speaking engagement), or to the cultural-religious background of the individual (divorce for a a strict Catholic). Several prominent researchers have commented on the impact of daily experiences on health. Lazarus has discussed the etiological significance of environmental stresses ranging from large scale catastrophes to more personal daily "hassles" (Lazarus & Cohen, 1977). Wolff has offered clinical support for the effects of "minor" events on somatic health (Wolff, Hare & Wolf, 1950) as have several Soviet researchers (see Kurstin, 1976). Thus, we chose to assess daily experiences because they are not subject to the methodological shortcomings of previous life event work and would allow us to explore the life events-illness relationship over time.

There is a spotty history of the study of daily experience. In a monograph remarkable for its detail, Barker and Wright (1951) reported on the minute by minute activities of a day in a young boy's life. The observers, armed with pad and pencil, followed the boy throughout the entire day in half hour shifts. Although extraordinarily complete, collecting data in this manner is clearly impractical for most investigations. Diaries are another method which has been used. Wolff often instructed his patients to record, in diary format, significant daily happenings, feelings and health changes. Although associations between emotionally arousing reports and exacerbations of various symptoms were observed (Wolff, Wolf & Hare, 1950), quantification of the degree of daily stress was not attempted. More recently, Rehm (1978) had college students note significant pleasant and unpleasant events in a daily diary for 14 consecutive days. A count of the number of recorded pleasant and unpleasant events served as the environmental measure. Similarly, Roghmann & Haggerty (1973), in a study of health service utilization, had mothers in 200 families use a diary format to log significant happenings of all family members. Each day was characterized by the researchers on a five point stress scale. Finally Holmes and Holmes (1970) had a sample (predominantly medical students) chronicle their daily experience. These free-format responses were translated into the SRE items enabling the authors to assign daily LCU scores based on SRRS ratings.

A major problem with these diary assessments is that the reliability

and validity of the data are unknown. A checklist, wherein a constant set of event stimuli are presented over days, offers several advantages. The difference between diary and checklist methods may be likened to that between recall and recognition. Because recognition is a more sensitive measure of retention than recall, presentation of an event checklist for recognition will likely increase accuracy compared to the free recall format of a diary. The greater structure of a checklist method may also minimize the effects that daily fluctuations in mood, health, etc. might have on event reporting with less structured recall methods. A checklist approach also allows experiences to be readily rated on several dimensions. Finally, the checklist method is more convenient for subjects, an important consideration in longitudinal research where they will complete the form daily over weeks or even months.

Several daily checklists assessing particular aspects of daily experiences have been developed in the last decade. Lewinsohn's Pleasant Event-Schedule is a list of 320 presumptively pleasant activities. The number of activities checked over many days has been used to predict depressed mood (Lewinsohn & Libet, 1972; Lewinsohn & Graf, 1973). Wills, Weiss and Patterson (1974) have constructed a daily checklist for assessing the quality of marriage. These checklists, however, are limited to specific areas and would not be appropriate as general measures of environmental

stress.

Our objective in these studies was to construct a checklist of daily activities which would characterize the events individuals experience. These events would then be rated on several dimensions to assess individuals' psychological reactions to them. Unlike Lewinsohn and Weiss, we were interested not in a single aspect of daily functioning such as marriage, but in the activities of an entire day. Several considerations directed our efforts: (a) Because we intended to have people use the checklists for lengthy periods, the list had to be of reasonable length. A burdensome task could result in high attrition rates and/or haphazard reporting. (b) We wanted to representatively sample daily experience and not be limited to any particular class of events such as negative experiences. Adequate sampling of event content would enable us to test hypotheses concerning the effects of composite indices of daily experiences, for example, the ratio of positive to negative events. (c) An accurate characterization of the day's experiences was necessary, yet it was possible that self-report could be biased, especially for events which cast an unfavorable light on the subject. Therefore, we developed a protocol for daily recording incorporating both self-report and the ratings of another person to increase report validity. (d) As no single quality of the environment has been agreed upon as defining "stressfulness," we designed the form such that checked items could be rated on several dimensions relating to the stress concept. (e) Finally, because some psychological

theories of stress regard anticipated experiences as similar to actual occurrences in that they may exert an effect on health (e.g., Lazarus, 1966), we allowed for these expected experiences to be recorded.

Method

A series of three studies was conducted and all drew upon a pool of subjects selected several months prior to the first study. Only married couples were accepted into the pool so we would have a convenient source of information from a significant other with whom the target individual had daily contact. Couples were solicited from local communities with mailings to addresses randomly selected from the county telephone directory and advertisements in local newspapers. Payment of $20-$80, depending on which of the three studies the couples was assigned to, was offered. Participants were geographically limited to nearby communities as we planned interviews with subsamples of the pool. A variety of questionnaires, including demographic questions, a life event inventory and health history, were sent to couples expressing interest and those who returned completed questionnaires entered the subject pool. It is impossible to accurately gage the response rate given that letters were sent to ineligible households (not married, separated) and we have no idea how many eligible couples read the advertisement. However, we may be certain that the selection was not truly random. Subsequently, we will report the attrition rates in each of the specific studies.

Rather than separately present the demographic characteristics of

the parts of the subject pool used in each of the three studies, we present a description of the entire pool in Table 1. The sample was almost entirely white, largely middle class, well educated and predominantly Catholic. Mean ages for husbands and wives were 38.8 and 36.0, respectively. Although the acquisition of subjects depended on voluntary selection, the statistics presented in Table 1 correspond reasonably well to census characteristics of the area from which they came.

Insert Table 1 about here

Study 1

Our first goal was to obtain a sample of daily activities by having participants record, in diary form, their experiences over a 2 week period. It was neither desirable nor practical to have couples record everything that they experienced during a day, so we chose to limit the content of their recording. Two concepts -- importance and emotion-inducing -- were chosen which we felt would not unduly restrict content variety. Our rationale was that subjectively minor happenings would not influence later health, at least not through psychological processes. Each concept is applicable to both "positive" and "negative" experiences, "gains" and "losses," "upsettingness" and many other qualities related to stress. Thus, the initial selection criterion would not exclude experiences qualitatively similar to those previously investigated and opened up the possibility of obtaining experiences which had not been

included in other life events assessments. In the second part of this study, we reduced the reported experiences into a set of more general categories to produce a manageable checklist. A checklist format was necessary for accurate and quick recording and provides other advantages which were discussed earlier.

Method

Subjects. Thirty-two couples were selected from the subject pool. Seven couples (22%) did not properly complete the forms or dropped out of the study.

Materials and Procedure. Couples were randomly assigned to the cells of a 2 x 2 factorial design. One factor was recording content (RC), the types of experiences subjects were to record. Half of the subjects received instructions that they should record experiences which ". . . are,in some way, important;" the remaining subjects were to record experiences". . . about which your feelings are stronger than usual, stronger in the sense that you feel more joy, more aggravation, more sorrow, more anger, more compassion, etc., than you usually do." The second factor was the amount of space available for recording experiences. Daily recording forms were printed on legal size sheets, 11 horizontal lines defined 10 time periods and intersected with vertical lines that formed small rectangles where subjects were to briefly describe experiences. Half of the subjects had 3 boxes for each time slot, while the remaining half had 6 boxes. This allowed us to explore how this method factor, number of recording spaces (NRS),

affected the frequency of event reporting.

Couples in all conditions were mailed 28 daily recording forms and 14 stamped return envelopes. Accompanying these materials were instructions informing both husbands and wives to each complete a form, preferably before bed, on each of 14 consecutive days. Completed forms were to be returned to us on the following day.

Results

An average of 12.1 days were recorded by each person, with a range of 6 to 14 days. A total of 1848 experiences were logged on 604 completed forms. The average number of experiences recorded per person-day, 3.06, did not differ for husbands and wives. An analysis of variance of number of daily experiences reported using sex of respondent, RC and NRS as factors yielded no significant main effects or interactions.

Most of the events reported were apparently minor occurrences such as "started a new sewing project," "fishing trip was good," "went to Mass," "tense meal at in-laws," and "stopped at friend's home for a drink." We were, however, surprised at the number of major experiences this group of 25 couples reported during only two weeks of recording (e.g., "father very ill," followed a few days later with "father died," "friend's wife may have cancer," "co-worker had heart attack," "death of son's friend," "worried about ill sister," "saw accident on expressway," and "aunt in critical condition").

We next proceeded to summarize the content of the 1848 items. Two

research assistants familiarized themselves with the items and each was instructed to produce a list of content categories arranged in outline form. The instructions did not specify either the themes to be used in organizing the items or the number of categories and outline levels. However, the assistants knew that the purpose of their work was to produce an event checklist for daily use. Following initial outline construction, they were instructed to use their outlines to classify a sample of the raw experiences as a means of checking the adequacy of their categories.

Although major differences in the two outlines were observed at the heading and sub-heading level, many of the categories were similar. To produce a single checklist, the two assistants and one of the authors (A.S.) met and worked out a new list which incorporated features of both the originals. This task differed in one important respect from the original content summarization procedure. Because the checklist items would be rated on several dimensions, which are described later, some of the items could be worded more generally than was the case in the two original outlines. For example, there would be no need to include the two separate items "pleasant family visit" and "unpleasant family visit" since the pleasantness attribute would be rated later by the subject. Therefore, only the generic item "family visit" would be required.

The resulting checklist included four major headings and 16 subheadings: Work Related Activities (concerning your boss, supervisor,

upper management, etc., concerning co-workers and/or employees, general happenings concerning self at work), Leisure (physical, social with friends, vacation, family outings, personal, financial), Family and Friends (concerning spouse, concerning children, concerning relatives, concerning friends and neighbors, family duties) and Other Happenings and Activities (personal, other). Sixty-six individual items were distributed across the 16 subheadings. These items themselves were often brief, having been partially described by the two levels of headings, although examples were included in parentheses for some of them.

At this point, it was not clear if the checklist was readily understandable or if experiences could be properly coded with it. As a preliminary check, two additional teams of two research assistants each used the checklist to classify two separate sets of approximately 400 of the original experiences with the intent of locating problematical categories. We found that none of outline categories were particularly difficult to understand and the interrater disagreements did not aggregate in any single or small set of categories. A stronger test of the adequacy of the checklist was performed in the next study.

Discussion

There are several aspects of ADE which distinguish it from other checklists. Items were derived by sampling a wide variety of daily experiences, as opposed to some subset of content based on investigator's particular needs. Experiences were arranged in an outline structure to

make completing the form easier. The items are considerably different than thoseon other event lists as they are often nonspecific with regard to the qualities that will later be rated by participants. For example, Holmes and Rahe (1967) include the items "Mortgage over $10,000" and "Mortgage under $10,000," presumably because they thought the larger mortgage would be in some sense more meaningful compared to the smaller one. By linking rating dimensions to the event checklist, participants can rate an item on just how meaningful it is. Thus, our single item "loans" covers the psychological impact of both large and small loans according to its rating. This is not to imply that all items are as nonspecific as this example. Within the category of job-related experiences, there are 16 items tapping much specific content. This allows us to distinguish among various kinds of work-related experiences such as "under a lot of pressure at work" vs."criticized for inadequate work, lateness, etc."

An item by item comparison of the major event list, the SRE, with our daily experience list revealed several overlapping content areas, yet many of the major events found on the SRE were not included in the daily list. Death of spouse, divorce, marital separation, and jail term, for example, are not found in ADE and would have to be written in by the participant (a feature we have built into ADE). Other major events, though, such as death of family member, fired at work, pregnancy, and change in financial state are covered by ADE. Furthermore, the daily list is much more thorough with regard to less catastrophic experiences. Another difference

among the two lists concerns the SRE's "change" items such as "change in number of arguments with spouse" or "change in recreation." Items worded in this manner imply an unspecified change over time, presumably over days, and as such, are not applicable to the daily list. Since ADE includes an ongoing measure of, for example, arguments with spouse, a direct and probably more valid measure of "change" in arguments is available to the researcher.

Study 2

With the initial checklist in hand, we next laid out the questionnaire with the items and their rating dimensions, and developed a protocol for completing the form. The form was piloted with a sample of community couples with the intent of assessing the practicality of its daily use and of testing several hypotheses concerning its validity.

The dimensions on which daily experiences were rated were taken from a factor-analytic study reported by Redfield and Stone (1979). In that investigation, 94 rather major life events were rated by college students on six bipolar scales suggested by previous life event studies. The original scales were reduced to three factors labeled desirability, change and meaningfulness. Although these dimensions emerged from a sample of major events rated by college students, we retained them as the alternative was an uninformed selection of dimensions and these factors appeared to represent adequately the qualities used in previous studies. Two of the dimensions were bipolar, change-stability and desirable-undesirable, while the meaningfulness dimension was unipolar.

In addition to events which have actually occurred, we allowed items to be checked and rated if they were anticipated as occurring in the near future. In accord with Lazarus's (1966) theory, this step was taken to allow the possible psychological impact of anticipations to be assessed. Items checked as anticipations should not be considered "events" as there is no objective stimulus; however, we included them because their psychological impact may be as great as that of real events (Lazarus, 1966).

Several ways of rating experiences on these dimensions were explored, but two considerations led to our choice of an adjective anchored, 14-(bipolar) or 7-(unipolar) point scale. Daily recording with the psychophysical techniques of magnitude estimation or production (Stevens, 1974) of event qualities was rejected because we felt that the task would be too time consuming. Category scales were of interest because they are easy to complete and anchored categories would be comparable from day to day. The drawback of the category method is that the intervals between categories are not equal as is usually assumed (Stevens, 1974). Although we will not present the data here, the anchoring adjectives used to rate the three dimensions were scaled with magnitude production techniques, thus providing metric information from category-like scales. The conjunction of magnitude scaling techniques and category scales seems to be a satisfactory solution for our needs.

Before discussing the three hypotheses we advanced concerning the

validity of the procedure, a description of how participants used the form is necessary. One member of the couple served as the "target" and that person completed the form about themselves. The remaining person served as an "observer" whose task was to complete the form about the target based on the observer's direct knowledge of the target's day. Because we did not want to reduce the power of our statistical tests by analyzing the data for effect of sex of respondent in these studies, husbands served as targets and wives as observers. Observers completed the form independently of targets in this study and based their responses only on what they observed; therefore, they had less information about the target's daily activities than did the targets themselves. A good example is in the area of work-related items; observers clearly knew much less about what went on at the target's work site since they were not there.

Some of the validity hypotheses tested in this study used what we will call concordance rates as the dependent measure. Concordance rates reflect the agreement between targets' and observers' report of the targets' daily experience and were computed using the familiar formula of agreements divided by agreements plus disagreements. The difference between concordance and interrater reliability is not computational, as both use the same formula, but is based on the amount of information the raters have at their disposal. For interrater reliability, both raters observe the same phenomenon and thus have the same amount of information about it; however, for concordance, the targets

have more information about their daily activities compared to the other raters, the observers. Given the differential amounts of information raters have in the two instances, we expected concordance to be considerably lower than results from usual interrater reliability assessments.

Our hypotheses were based on several assumptions we made about how concordance rates should interface with various other features of the recording task. If these hypotheses were not supported, we would have less confidence in the way which participants were using the materials. This is in some ways parallel to the usual construct validation procedure in the sense that a measure is expected to covary with different measures in predicted ways.

The first hypothesis was that the importance of individual experiences, as defined by the husband's rating of meaningfulness, would directly covary with target-observer concordance. We expected higher concordance with the more meaningful experiences. The rationale behind this prediction was that important experiences would generally be more public and more readily available to observers, thus producing higher concordance rates. Second, concordance rates should be higher on weekends since spouses would likely spend more time with one another. Third, events checked as anticipated would have lower concordances compared to those checked as occurring during the day. Again, the reasoning was that anticipated experiences would be less accessible to the observer. Finally, by collecting daily mood ratings, using the brief

version of the Nowlis Mood Adjective Checklist (Nowlis, 1965), we examined the relationship between life events and affect. Previous research generally has indicated that unpleasant events are associated with "negative" affective states (e.g., depression) and pleasant events with "positive" emotions (e.g., Rehm, 1978).

A second purpose of this study was to locate difficulties people had using the form and assess their hypotheses about the purpose of the research. This was accomplished by telephone interviews conducted after the daily recording was completed.

Method

Subjects. Thirty-two couples were selected from the subject pool, twelve of whom had also participated in the first study (several months passed between the two studies). Five couples (16%) did not complete the materials yielding a final N of 27.

Materials. Daily experience checklists were printed on both sides of legal size sheets. Spaces were available at the top of the sheet for name, date, day and sex of the respondent. Immediately below these spaces were the three event rating dimensions (desirability, meaningfulness and change) with a one sentence description of each scale and either 7 or 14 adjectives (Immeasurably, Extremely, Quite, Very, Moderately, Somewhat, Slightly) modifying the dimension (the adjectives were repeated for each pole of the bipolar scales). Just to the right of each adjective-dimension combination was a number ranging from 1-7 for meaningfulness and from 1-14 for desirability and change. A fourth scale was used for the events which

were anticipated. Subjects indicated the probability that the anticipated experience would actually happen with a scale ranging from a 1 in 10 to a 9 in 10 chance of occurrence.

Just below the rating keys was the event checklist. In addition to the 66 items, three blank lines were appended at the end of the list to allow items to be written in. The write-in category allowed us to gather further data concerning whether the checklist allowed people to adequately record their daily experiences and also provided a means for people to note major but low frequency events such as those on the SRE. Written-in items were rated in the same manner as the original 66 items. Subjects were instructed to place a check in a circle located to the left of each item if the event was experienced by the target or an "A" for anticipated happenings. To the right of the item there were four sets of open parentheses that were in alignment with four column headings: one for each of the three rating dimensions and one for the anticipation rating. Whenever an item was marked with a check or an "A", subjects were to rate the event on each of the three dimensions. As a reminder to participants of their target-observer status, the sentence "Wives: Be sure to rate your husbands, not yourselves" was placed at the top of each form.

Procedure. Couples were mailed packets containing a detailed letter explaining the recording procedure, 28 blank daily recording forms (14 per individual) and 14 stamped return envelopes. Instructions

stated that the forms should be completed independently at the end of each of 14 consecutive days, preferably just before bed, starting on a specified date (the same for all couples). After completion, both spouses' forms were to be placed into an envelope and mailed the following morning.

Results

Before examining the hypotheses, we will report some data on how the forms were used. The average number of days for which couples completed the forms was 13.2. On the 704 completed forms returned, 3,700 actual experiences were checked or 5.26 per form. Husbands and wives reported similar numbers of experiences, 1856 and 1844, respectively. Anticipated experiences were reported less frequently, 848 were reported, or 1.20 per day.

The optional blank space for recording experiences not on the list was used 106 times (2% of all checked items). Many of the write-ins received low ratings on meaningfulness and for the most part could have been coded with one of the 66 items. Those that we felt were not covered by the list deserve attention as they suggested modification in checklist content. There were four such experiences, accounting for 20 write-ins: visits to health care professionals; witnessed an unusual happening; death of friend or acquaintance; and psychiatric difficulties. Besides providing useful information for the next version of the checklist, the finding supported our continued use of the write-in procedure.

As for the dimensional ratings of daily experiences, we will briefly discuss the frequency distributions of each of them. Change-stability approximated a normal distribution, though the slope was steeper on the change side with a modal value of "slightly changing." The shape of the desirability distribution was skewed toward the undesirable pole and had a modal value of "very desirable." Except for the two extreme endpoints, "immeasurably" and "extremely," the distribution of meaningfulness was rectilinear. There were markedly fewer responses on "extremely" and even fewer at "immeasurably." The three dimensions were moderately intercorrelated, desirability with change, -.33, desirability with meaningfulness, .50, and change and meaningfulness, -.06.

In total, 883 events were reported as occurring on the same days by both spouses, 973 were reported by husbands alone and 961 were reported by wives alone, yielding an overall concordance rate of .31. Generally, the outline heading with the lowest item concordances was Work-Related, while Leisure activities generally had the highest concordances. Family and Friends' items yielded great variability in concordance rates.

The first hypothesis, that experiences defined as meaningful by husbands would have higher concordances than those rated as less meaningful, was tested by examining the concordance rate at each of the seven levels of meaningfulness. A significant positive correlation among meaningfulness descriptors and concordances supports the

hypothesis, while a negative or non-significant correlation does not. The product-moment correlation was +.76 (df = 5, p< .02), supporting the hypothesis.

Examination of differences in concordance rates on each day of the week tested the second hypothesis. Visual inspection of the rate, and an examination of the rate broken down further by husband-rated meaningfulness, revealed no increases in concordance rates on weekends. No statistical testing was performed on the basis of the visual inspection.

The third hypothesis, that the concordance rate based on anticipated experiences would be lower than the rate based on those experiences which occurred, required comparing the concordance rates for events which had occurred or were anticipated. Computed across all families, the anticipated rate was .13 and the actual experience rate .31. Using variability estimates in the rates among couples, a correlated t-test between the two was highly significant ($t(25) = 6.98$, $p < .001$) lending support to the hypothesis.

Finally, using the targets' ratings, events were classified as desirable or undesirable and correlated with the Nowlis Mood Scales across days. In general, the number of desirable experiences was directly related to the positive mood scales (elation, $r = + .28$, vigor, $r = + .25$, social affection, $r = + .20$, all $p < .01$) and inversely related to the negative scales (anxiety, $r = -.16$, skepticism, $r = -.17$, both $p < .05$). Undesirable events showed the reverse pattern

(anxiety, r = + .26, sadness, r = + .20, and surgency, r + -.23, all $p < .05$).

Within nine days of completing the last daily recording form, couples were contacted and responded to a set of questions read to them by the interviewer. In all but one case targets (husbands) were interviewed. Most participants thought that the purpose of the study had something to do with marital communication given the protocol of wives rating their husbands and not themselves. Initially, in open ended questions, none of the husbands guessed the actual purpose of the study, yet when asked directly if it concerned stress, many thought that it might. Husbands were also asked about their use of the 7- and 14- point scales: most said they referred to the adjective key when filling out the form, while the small remaining portion of the sample reported that they had memorized the response keys and had not needed to constantly refer to them. As for daily completion, participants reported that they varied from a nightly routine on the average of once during the two-week period. The time needed to complete the form was about 12 minutes.

An open ended section of the interview requested that participants discuss difficulties they had using the form. Many critical comments were made about the Change-Stability scale. According to the subjects, it was somewhat difficult to understand and was not always relevant because it only seemed to apply to "major" events. The Anticipation scale elicited similar, though fewer, comments. Several participants

expressed a need for a not-applicable or zero point on the scaling keys. Three husbands said there were too many numbers (adjectives) on the scales. As for the event outline itself, there were no comments, however, some participants said that some outline categories did not apply to them, that more "child categories" were needed and that a category for working around the house would be useful.

Discussion

Our first attempt at an assessment of daily experience yielded a large number of checked events recorded over 352 person days. Based on the low frequency of write-in events and the postrecording interviews, the checklist appeared to allow respondents to adequately describe the events of these days. An important point was that participants generally enjoyed completing the form as attrition rates in studies using the form for longer periods would probably be high if subjects did not like the task. The amount of time needed to complete the form, on the average 12 minutes, appeared reasonable. Two of the three hypotheses tested concerning concordance were supported. More meaningful experiences had higher husband-wife concordances compared to less meaningful ones. Anticipated experiences had lower concordances than those which actually happened. The hypothesis that concordance rates would increase on weekends because of more spouse contact was not supported. Perhaps our assumption of more contact on weekends is not justified (the weekend fisherman could be such a case). Further information on validity was provided by the event-mood correlations. Mood was

reliably related to events in the directions suggested by previous research.

A major issue was posed by the relatively low husband-wife concordances. But the concordance figures reported are similar to data obtained in studies of the accuracy of self-monitoring (see Nelson, 1977, for a review). Correlations between self-recordings and independent observations are modest and show considerable variation depending on the target behavior being monitored (e.g., smoking, $\underline{r}$ = .61, verbal behavior in a dyad, $\underline{r}$ = .37). Nonetheless, we felt that concordances could be increased by increasing the clarity of the form itself and by providing more training to participants.

A revision of the daily experience checklist incorporated the participants' comments and several additional revisions our group felt were needed to increase the form's clarity and ease of completion. The number of items was reduced from 66 to 61 by collapsing a few items into expanded single items, often with examples. The item "under close scrutiny by boss, supervisors, etc.," for example, was subsumed by "under a lot of pressure at work" with close scrutiny as an example. A "not applicable" option was added to each of the rating scales to accommodate those times when a scale did not seem to apply to an experience.

The format of the checklist was changed as well. A permanent booklet with the items, detailed instructions and a description of how to classify experiences replaced the separate instruction/answer sheet

arrangement of the previous study. Answer sheets were designed to be placed into the booklet during use; thus, they could be mailed back with relatively low postage expense. Finally, the theoretically interesting dimension of "control over an event's occurrence" was added to the rating dimension section of the checklist (Averill, 1973).

In the next study, couples were also visited in their homes and given training in using the revised form to be sure that it was being completed properly. Some couples were also contacted while they were completing the forms to explore the reasons for the husband-wife disagreements.

Study 3

This study had two purposes: exploring the origins of the low husband-wife concordance rates observed in the previous study and piloting the revised checklist and training procedure. Specifically, our concerns centered around the origin of husband-wife "errors" in recording, especially instances where the wives reported events which their husbands did not report as these implied that either husbands were not recording their experiences completely or that the form was being improperly used.

Method

Subjects. Ten couples were selected from the subject pool, 8 of whom had participated in Study 1. Couples were selected for participation only if they had an extension telephone in their home so that we could interview husbands and wives simultaneously. All participants

completed the study.

Procedure. Couples were randomly assigned to either the call group or no-call group such that there were five in each group. Prior to daily recording, each couple was visited by a research assistant and received detailed instructions on how to complete the form. The entire form was reviewed and, as a practice exercise, subjects coded the previous two days using the instrument and received immediate feedback about their recording. Visits averaged approximately 2.5 hours. The call group received several late-evening telephone calls, after the forms were completed, during the course of the two week recording period. During these calls, all items on the checklist were reviewed and any disagreements were discussed and recorded by the interviewer. The no-call group was included so that the effects of the phone call procedure on concordance could be assessed. This group simply completed the form for two weeks.

Results

Six couples reported for 14 days while the remaining four couples reported for 15 days (the latter couples completed the two extra forms we routinely left). During the 288 person-reporting days, 985 experiences were checked or 3.42/day and 113 anticipated experiences were noted, or .39/day. Unlike Study 2, husbands reported considerably more events, 3.93 per day, than wives did about their husbands, 2.91 per day. The overall concordance figure, .34, was only slightly higher than the one obtained in the previous study. The average concordance rate of

the call group was higher than that of the no-call group, .39 versus .31, respectively, but this difference was not significant ($t(8) = -.91$).

Of the nonconcordant responses, 65% resulted from the wife not reporting an event recorded by the husband. Surprisingly, though, 35% were due to the wife reporting an event which the husband did not record. The subjects who received telephone calls allowed us to understand the sources of disagreement.

Couples in the call group received 23 telephone calls, an average of 4.6 per couple. During those 23 days a total of 173 events, 146 actual and 27 anticipated, were checked by husbands and wives; of the actual events, 72 were concordant and 74 were nonconcordant, while only 7 anticipated events were concordant and 20 were nonconcordant. Thus, the concordance rate for days on which phone calls were made was 46%. Sources of disagreements, as determined from the interviews, are presented in Table 2.

Nine events (12% of the total errors) were coded by both husband and wife, but with different categories. The majority (72%) of events coded only by husbands were those that the wife did not observe. Of the remainder, the wife forgot 6 events (13%) and judged another 6 as too minor to be coded. Of the events coded only by wives, 5 (38%) were viewed by the husbands as too minor to code. In 3 instances (23%), the husband had forgotten the event and in another 3, the husband was unaware of the events' occurrence. (In these latter cases, typically found in the Family and Friends section, the wife had presumed that

the husband was aware of some occurrence such as a child's special achievement.)

Insert Table 2 about here

Discussion

The revised forms and more detailed training did produce a slight, but nonsignificant increase in the overall concordance figure. More importantly, however, the data from the telephone calls revealed that many instances of discordance were not actually "errors." The observer often was unaware of many husband-reported events. And in some instances, the husband had forgotten an event reported by the wife. These two categories comprised about half of the discordant responses of the group which received telephone calls. Recalculating an overall concordance figure, with these categories no longer counted as disagreements, yields a value of 67%.

This data provides support for our original position that concordance should be viewed as conceptually distinct from standard measures of reliability. The telephone calls revealed that most of the reporting disagreements, at least during the days we sampled, came about because the observer had less information than the target concerning the target's daily activities. Nonetheless, there was room for recording improvement as evidenced by the occasional use of different categories for recording the same event and by the times the target did not record events which had occurred yet were recorded by the observer.

Final Revision

Based on the comments solicited from participants in this study, two additional items were added to the checklist: hobbies, readings, letter writing, and daily routine getting to you. Table 3 presents the final version of ADE including major and minor outline headings, the experiences themselves, and any parenthetical elaborations or clarifications of the experiences.

Insert Table 3 about here

A major change in the way the form is completed grew out of the data from the previous study. In an effort to increase the form's validity, the daily recording procedure was modified to incorporate observers' knowledge into targets' report of their daily experiences.[2] Having an additional source of information would approach the ideal situation in which all people who had any contact during the day with the target would also record his/her experiences. This is, we believe, what is usually meant by declaring that something is objective, namely, that it meets some agreed upon consensual criterion.

The ADE's procedure now includes three steps. In the first, target and observer work separately filling out a section of the checklist called the "workspace." The target checks those items which occurred throughout the day or which were anticipated as happening in the near future. The observer completes the form in the same way, although about the target. Question marks and other notations may also be used

in this step as these are only the first impressions. In the second step, target and observer discuss all the items they marked in the previous step with the goal of coming to some mutually agreed upon set of experiences representing the target's day. Given the target's more intimate knowledge of the experiences, disagreements are resolved by the target. The set of experiences produced in this step are recorded in either occurred or anticipated boxes on both target's and observer's ADE's. In the last step, target and observer work separately rating the checked experiences on the four dimensions.

The first and second steps are intended to maximize accurate characterization of the target's daily experience. By having participants independently arrive at an approximation of the target's day, the procedure avoids a situation in which either the target or observer may become too dominant. Thus, ADE's experience assessment becomes more objective as it is based on the reports of two people. On the other hand, perception of experience qualities are rated separately as here we are interested in the more personal, psychological impact of events, and this demands subjectivity.

General Discussion

Based on the data reported in the three studies, we believe that we have developed an instrument which can be used in the prospective, longitudinal study of the relationship between life events and illness. Important features of ADE include the following: (a) The sample of events was based on an empirically generated pool which was then

reduced to a manageable number of items. The low frequency of write-ins in our study demonstrated that the categories were indeed adequate for the task of allowing participants to record their daily experiences, yet we retain the write-in option for the few times when events cannot be otherwise recorded. (b) The checklist method minimizes the effects of daily fluctuations in mood and health which might seriously contaminate diary methods. (c) Subjective reactions to the events are rated on four dimensions (three of them empirically derived), rather than the unidimensional approaches of past efforts. To our knowledge, this is the only life event instrument which includes ratings of the perception of anticipated events. (d) Ratings are obtained from individuals on adjective anchored 7- or 14- point scales which can be scaled using magnitude-production. (e) The form takes only 10 - 15 minutes to complete, thus reducing the likelihood of substantial attrition in longitudinal studies. (f) The determination of event occurrence is a joint process wherein the subject is aided in recalling and defining events by a person with some knowledge of their day.

The issue of reliability was addressed by examining target-observer concordance in event reporting. Overall concordance figures were .31 (Study 2) and .34 (Study 3). But our concordance figures are not the same as a traditional interobserver estimate of reliability. As revealed by the telephone call part of Study 3, a substantial proportion of discordance was due to observers not being aware of events reported by the targets. Our current procedure, having the forms completed by

both target and observer, is designed to maximize the accuracy of the report of a day's events. Several possible sources of error are reduced by having the target and observer first fill out ADE independently and then reconvene to go over each other's checklists. First, in instances of target-alone reports, the target is forced to corroborate the occurrence of those events which the observer was not able to witness. Second, in the case of observer-alone reports, the observer's checklist functions as stimulus for the target's recall. Third, the couple is forced to agree on the category in which to code an event, thus minimizing the use of inappropriate categories. Finally, the procedure brings the recordings of both target and observer under each other's scrutiny which may increase accuracy by minimizing haphazard reporting and simple errors.

Validity was addressed by examining predicted differences in concordance rates and by relating data from ADE to daily reports of mood. As expected, concordance was higher for more meaningful experiences and higher for actual than for anticipated events. Also as anticipated, the number of desirable events was directly related to scores on positive mood scales and the number of undesirable events was directly related to scores on negative mood scales.

In conducting prospective work, investigators using ADE must continue to be aware of the admonitions of Dohrenwend (1974) about groups of events defined by their possible linkages to psychiatric and somatic states. For example, when studying physical illness, the investigator

should be particularly careful not to include items 57 (Illness to self) and 58 (Visit to health care worker), and must be cautious in interpreting the meaning of any other items which might bring the target in contact with illness (i.e., children, wife, or relative sick). Furthermore, we have taken the view that both objective and subjective assessments are important and these are reflected in the event occurrence and event ratings. However, two items concerning self-expectations and goals (#53 and 54) were included because they tap important psychological experiences which are precipitated by "objective" environmental events, but are not themselves objective. We recognize that some investigators may not wish to include these items in a purely "environmental score."

We hope that ADE will also prove useful in research areas where daily events are of theoretical significance. Recent work in daily physiological changes has shown that catecholamine and corticosteroid peaks precede illness onset by a few days (Gruchow, 1979; Mason, Buescher, Belfer, Artenstein & Mougey, 1979). Considering that these substances have been broadly linked to psychosocial stimuli (for example, Mason, 1968; Ursin, Baade & Levine, 1978), this work suggests that an instrument such as ADE be included to provide a potential predictor of these physiological changes. With regard to psychiatric dysfunction, current theories of depression (e.g., Brown & Harris, 1978; Lewinsohn, 1974; Seligman, 1974) can best be evaluated in prospective studies employing an adequate means of assessing daily experience and subjective reactions

to it. Similarly, daily experiences (particularly "stressful" ones) are commonly invoked as explanations, either by themselves or in interaction with diatheses, of many forms of psychopathology (see Davison & Neale, 1978). But the research on which these claims have been made is seriously flawed, resting principally on retrospectively obtained information. ADE could be particularly valuable in studying vulnerable populations or in following discharged patients to observe the possible association between life events and clinical remission.

References

Andrews, G. & Tennant, C. Being upset and becoming ill: An appraisal of the relation between life events and physical illness. The Medical Journal of Australia, 1978, 1, 324-327.

Averill, J.R. Personal control over aversive stimuli and its relationship to stress. Psychological Bulletin, 1978, 80, 286-303.

Barker, R.G. & Wright, H.F. One boy's day. New York: Harper & Row, 1971.

Brown, G.W. Meaning, measurement, and stress of life events. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Brown, G.W. & Harris, T. Social origins of depression. New York: Free Press, 1978.

Brown, G.W., Sklair, F., Harris, T.O., & Birley, J.L.T. Life-events and psychiatric disorders.Part 1: Some methodological issues. Psychological Medicine, 1973, 3, 74-87.

Chiriboga, D.A., & Dean, H. Dimensions of stress: Perspectives from a longitudinal study. Journal of Psychosomatic Research, 1978, 22, 47-55.

Cline, D.W. & Chosy, J.J. A prospective study of life changes and subsequent health changes. Archives of General Psychiatry, 1972, 27, 51-53.

Coyne, J.C. Depression and the response of others. Journal of Abnormal Psychology, 1976, 82, 186-193.

Davison, G.C. & Neale, J.M. Abnormal psychology: An experimental clinical approach (2 ed.) New York: John Wiley & Sons, 1978.

Dohrenwend, B.P. Problems in defining and sampling the relevant population of stressful life events. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Dohrenwend, B.S., & Dohrenwend, B.P. Overview and prospects for research on stressful life events. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Dohrenwend, B.S., Krasnoff, L., Askenasy, A.R., & Dohrenwend, B.P. Exemplification of a method for scaling life events: The PERI life events scale. Journal of Health and Social Behavior, 1978, 19, 205-229.

Folkman, S., Schaefer, C., & Lazarus, R.S. Cognitive processes as mediators of stress and coping. In V. Hamilton & D.M. Warburton (Eds.), Human stress and cognition: An information-processing approach. London: John Wiley & Sons, in press.

Gersten, J.C., Langner, T.S., Eisenberg, J.G., & Orzeck, L. Child behavior and life events: Undesirable change or change per se? In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Gruchow, H.W., Catecholamine activity and infectious disease episodes. Journal of Human Stress, 1979, 5, 11-17.

Holmes, T.S. & Holmes, T.H. Short-term intrusions into the life style routine. Journal of Psychosomatic Research, 1970, 14, 121-132.

Holmes, T.H., & Rahe, R.H. The social readjustment rating scale. Journal of Psychosomatic Research, 1967, 11, 213-218.

Jenkins, C.D., Hurst, M.W. & Rose, R.M. Life changes. Do people really remember? Archives of General Psychiatry, 1979, 36, 379-384.

Kurstin, I.T. Theoretical principles of psychosomatic medicine. New York: John Wiley & Sons, 1976.

Lazarus, R.S. Psychological stress and the coping process. New York: McGraw-Hill, 1966.

Lazarus, R.S. & Cohen, J.B. Environmental stress. In I. Altman & J.F. Wohwill (Eds.) Human behavior and the environment: Current theory and research. New York: Plenum Press, 1977.

Lazarus, R.S., Cohen, J.B., Folkman, S., Kanner, A & Schaefer, C. Psychological stress and adaptation: Some unresolved issues. In H. Selye (Ed.), Guide to stress research. New York: Van Nostrand Reinhold Co., 1979.

Lehman, R.E. Symptom contamination of the schedule of recent events. Journal of Consulting and Clinical Psychology, 1978, 46, 1564-1565.

Lewinsohn, P.M. A behavioral approach to depression. In R.M. Friedman & M.M. Katz (Eds.) The Psychology of depression: Contemporary theory and research Washington, D.C.: Winston-Wiley, 1974.

Lewinsohn, P.M. & Libet, J. Pleasant events, activity schedules, and depressions. Journal of Abnormal Psychology, 1972, 79, 291-295.

Lewinsohn, P.M. & Graf, M. Pleasant activities and depression. Journal of Consulting and Clinical Psychology, 1973, 41, 261-268.

Mason, J.W. A review of psychoendocrine research on the pituitary-adrenal cortical system. Psychosomatic Medicine, 1968, 8, 576-607.

Mason, J.W., Buescher, E.L., Belfer, M.L., A tenstein, M. & Mougey, E.H. A prospective study of corticosteroid and catecholamine levels in relation to viral respiratory illness. Journal of Human Stress, 1979, 5, 18-28.

Miller, F.T., Bentz, W.K., Aponte, J.F., & Brogan, D.R. Perception of life crisis events: A comparative study of rural and urban samples. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Nelson, R.O. Methodological issues in assessment via self-monitoring. In J.D. Cone & R.P. Hawkins (Eds.), Behavioral assessment: New directions in clinical psychology. New York: Brunner-Mazel, 1977.

Nowlis, V. Research with the mood adjective checklist. In S.S. Tompkins & C.E. Izard (Eds.) Affect, cognition, and personality. New York: Springer, 1965.

Paykel, E.S. Life stress and psychiatric disorder: Applications of the clinical approach. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Paykel, E.S. Contribution of life events to causation of psychiatric illness. Psychological Medicine, 1978, 8, 245-253.

Rabkin, J.G. & Struening, E.L. Life events, stress, and illness. Science, 1976, 194, 1013-1020.

Rahe, R.H. The pathway between subjects' recent life changes and their near-future illness reports: Representative results and methodological issues. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Redfield, J. & Stone, A. Individual viewpoints of stressful life events. Journal of Consulting and Clinical Psychology, 1979, 47, 147-154.

Rehm, L.P. Mood, pleasant events, and unpleasant events: Two pilot studies. Journal of Consulting and Clinical Psychology, 1978, 46, 854-859.

Roghmann, K.J., & Haggerty, R.J. Daily stress, illness, and use of health services in young families. Pediatric Research, 1973, 7, 520-526.

Sarason, I.G., Johnson, J.H., & Siegel, J.M. Assessing the impact of life changes: Development of the life experiences survey. Journal of Consulting and Clinical Psychology, 1978, 46, 932-946.

Seligman, M.E.P. Depression and learned helplessness. In R.J. Friedman & M.M. Katz (Eds.) The Psychology of depression: Contemporary theory and research. Washington, D.C.: Winston-Wiley, 1974.

Selye, H. The stress of life. New York: McGraw-Hill, 1956.

Stevens, S.S. Psychophysics: Introduction to its perceptual, neural and social prospects. New York: Wiley, 1974.

Stone, A.A., & Neale, J.M. Life event scales: Psychophysical training and rating dimension effects on event weighting coefficients. Journal of Consulting and Clinical Psychology, 1978, 46, 849-853.

Theorell, T. Life events before and after the onset of a premature myocardial infarction. In B.S. Dohrenwend & B.P. Dohrenwend (Eds.), Stressful life events: Their nature and effects. New York: John Wiley & Sons, 1974.

Ursin, H., Baade, E. & Levine, S. Psychology of stress: A study of coping men. New York: Academic Press, 1978.

Uhlenhuth, E., Balter, M., Lipman, R.S. & Haberman, S.J. Remembering life events. In Strauss, J.S., Babigian, H.M., & Roff, M. (Eds.). The origins and course of psychopathology: Methods of longitudinal research. New York: Plenum, 1977.

Vinokur, A., & Selzer, M.L. Desirable versus undesirable life events: The relationship to stress and mental distress. Journal of Personality and Social Psychology, 1975, 32, 329-337.

Weiss, J.M. Effects of coping responses on stress. Journal of Comparative and Psysiological Psychology, 1968, 65, 251-260.

Wershow, H.J., & Reinhart, G. Life change and hospitalization -- A heretical view. Journal of Psychosomatic Research, 1974, 18, 393-401.

Wills, T.A., Weiss, R.L. & Patterson, G.R. A.behavioral analysis of the determinants of marital satisfaction. Journal of Consulting and Clinical Psychology, 1974, 42, 802-811.

Wolff, H.G., Wolf, S., & Hare, C.C. Life stress and bodily disease. Baltimore, Md.: Williams and Wilkins 1950.

Footnotes

1. The authors thank Susan Hedges, Eileen McKearney-Ross, Bruce Reed and Willo White for their assistance. This research was supported by the Office of Naval Research.

   Reprint requests to:

   Arthur A. Stone

   Long Island Research Institute

   Health Sciences Tower, T-10

   Stony Brook, New York 11794

2. ADE could, of course, be used without gathering data from observers as the results of study 3 indicate that the target's reports are generally accurate. However, the multiple recording procedure does offer some incremental validity.

Table 1

Demographic Characteristics of Subject Pool

	Sex of Respondent	
	Male	Female
Age		
Mean	38.8	36.0
Standard Deviation	10.6	9.3
Race		
White	99%	96%
Hispanic	0%	1%
Black	0%	0%
Other	1%	3%
Education		
1st - 6th grade	1%	1%
7th - 9th grade	6%	5%
10th -12th grade	27%	44%
Some college	37%	33%
B.A. or equivalent	16%	6%
M.A.	10%	10%
Ph.D., M.D., etc.	4%	0%
Social Class[1]		
I (highest)	12%	
II	22%	
III	30%	
IV	33%	
V	4%	
Religion		
Catholic	47%	51%
Protestant	14%	16%
Jewish	27%	29%
Other	5%	4%
None	6%	0%

[1]Social class computed per family based on husband's status

Table 2

Sources of Nonconcordance*

A. Both husband and wife coded the experience but used different categories - N = 9.

B. Target (husband) coded experience, wife did not

Reason for disagreement	N of occurrences
Forgot	6
Unaware of event	33
Thought it too minor to code	6
Other	1

C. Wife (observer) coded experience, husband did not

Reason for disagreement	N of occurrences
Forgot	3
Unaware of event	3
Thought it too minor to code	5
Thought it was not codeable	1
Other	1

*The errors do not sum to 74 because of instances where husband and wife differed in coding an experience as one event or as several.

Table 3

Major headings, secondary headings and items appearing on ADE

MAJOR HEADING	SECONDARY HEADING	EXPERIENCE	ELABORATION
Work Related Activities	Concerning boss, supervisor, upper management, etc.	(1) Praised for a job well done	a specific task or job, or general commendation
		(2) Criticized for inadequate work, lateness, etc.	
	Concerning co-workers, employees, and/or clients	(3) Employees not working well	
		(4) Emotional interactions with co-workers, employees, clients	arguments, personality conflicts, pleasant interactions
		(5) Firing or disciplining (by Target)	
		(6) Socializing with staff, co-workers, clients	lunch, work parties, etc.
	General happenings concerning target at work	(7) Promotion, raise	
		(8) Fired, quit, resigned	
		(9) Some change in job	
		(10) Under a lot of pressure at work	deadlines, close scrutiny by boss, extra work, etc.

MAJOR HEADING	SECONDARY HEADING	EXPERIENCE	ELABORATION
Leisure Activities	Physical	(11) Done alone, primarily non-competitive	jogging, yoga, etc.
		(12) Social leisure activities primarily competitive	tennis, bowling, etc.
	Non-physical activities	(13) Out alone	movies by oneself, bar, etc.
		(14) Dining or entertaining at home or out	
		(15) Club or group meeting	Elks, community group, etc.
		(16) Out with friends	bar, dance, get together, play, concert, movie
	Vacation	(17) Spent at home	
		(18) Spent away from home	
	Outings	(19) Beach, park, picnic, fishing, museums, auto show, ball games, etc.	
	Personal	(20) Self improvement	high school or college courses, craft classes, etc.
		(21) Hobbies, reading, letter writing	
Financial Activities		(22) Loans	
		(23) Investing	

MAJOR HEADING	SECONDARY HEADING	EXPERIENCE	ELABORATION
		(24) Major selling	car, boat. house, etc.
		(25) Major buying	car, boat, house, etc.
		(26) Inheritance or windfall	
		(27) Financial problems	trouble making ends meet
Family and Friend Activities	Concerning target and spouse	(28) Close interaction with spouse	special sharing, etc.
		(29) Sexual interaction	within last 24 hours
		(30) Not getting along well with spouse	but no specific argument or problem
		(31) Arguments or reprimands from spouse	
		(32) Praise from spouse	
		(33) Spouse away	business, vacation, etc.
		(34) Pregnancy or birth in family	daily reaction
	Concerning children	(35) Disciplinary problems	children fighting among themselves or peers
		(36) Children getting along well together or with peers	
		(37) Children have some special achievement	academic, athletic,etc.
		(38) Children have disappointment or failure	

MAJOR HEADING	SECONDARY HEADING	EXPERIENCE	ELABORATION
		(39) Problems at school	
		(40) Children away from home	at relatives, camp, etc.
		(41) You are getting along well with children	
		(42) Children sick or injured	
	Concerning relatives	(43) General contact with relatives	telephone calls, etc.
		(44) Relatives sick or death of relative	
		(45) Visit with relatives	
		(46) Problems getting along with relatives	
	Concerning friends and neighbors	(47) Death of friend, neighbor or acquaintance	
		(48) Helping a friend, neighbor or acquaintance	
		(49) Problems with friend, neighbor or acquaintance	
		(50) Especially good interactions with friend, neighbor or acquaintance	
	Family duties	(51) General housework	painting, gardening, cleaning, putting in storm windows, etc.

MAJOR HEADING	SECONDARY HEADING	EXPERIENCE	ELABORATION
		(52) Other family-related duties away from home	special shopping, errands, servicing car, dry cleaning, etc.
Other Activities and Happenings	Concerning target	(53) Not meeting up to self-expectations	not a previously checked item
		(54) Accomplishing goals or meeting self-expectations	not a previously checked item
		(55) Minor personal problem or frustration	burned breakfast, scratch on car, etc.
		(56) Major personal problem or frustration, but not a previously checked item	auto accident, law suit, etc.
		(57) Illness or injury to self	
		(58) Visit to health care worker for bodily complaint	
		(59) Visit to health care worker for psychological complaint	including pastoral advice, etc.
		(60) Weather getting to you	
		(61) Daily routine getting to you	e.g., work, household, social
		(62) Traveling problems	unusual traffic, ticket, missed plane, etc.
		(63) Witnessed something unusual	hold-up, etc.

P4-5/A1
Sequencial by Agency

452:KD:716:tam
78u452-883
6 November 1979

LIST 1
MANDATORY

Defense Documentation Center (12 copies)
ATTN: DDC-TC
Accessions Division
Cameron Station
Alexandria, VA 22314

Library of Congress
Science and Technology Division
Washington, DC 20540

Chief of Naval Research (3 copies)
Office of Naval Research
Code 452
800 N. Quincy Street
Arlington, VA 22217

Commanding Officer (6 copies)
Naval Research Laboratory
Code 2627
Washington, DC 20375

P4-5/A3
Sequencial by State/City

452:KD:716:tam
78u452-883
6 November 1979

LIST 2
ONR FIELD

Commanding Officer
ONR Branch Office
1030 E. Green Street
Pasadena, CA 91106

Psychologist
ONR Branch Office
1030 E. Green Street
Pasadena, CA 91106

Commanding Officer
ONR Branch Office
536 S. Clark Street
Chicago, IL 60605

Psychologist
ONR Branch Office
536 S. Clark Street
Chicago, IL 60605

Commanding Officer
ONR Branch Office
Bldg. 114, Section D
666 Summer Street
Boston, MA 02210

Psychologist
ONR Branch Office
Bldg. 114, Section D
666 Summer Street
Boston, MA 02210

Office of Naval Research
Director, Technology Programs
Code 200
800 N. Quincy Street
Arlington, VA 22217

P4-5/A5
Sequencial by OPNAV Code

452:KD:716:tam
78u452-883
6 November 1979

LIST 3
OPNAV

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Scientific Advisor to DCNO (Op-01T)
2705 Arlington Annex
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Director, Human Resource Management
Division (Op-15)
Department of the Navy
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Head, Research, Development, and
Studies Branch (Op-102)
1812 Arlington Annex
Washington, DC 20350

Deputy Chief of Naval Operations
(Manpower, Personnel, and Training)
Director, Human Resource Management
Plans and Policy Branch (Op-150)
Department of the Navy
Washington, DC 20350

Chief of Naval Operations
Head, Manpower, Personnel, Training
and Reserves Team (Op-964D)
The Pentagon, 4A578
Washington, DC 20350

Chief of Naval Operations
Assistant, Personnel Logistics
Planning (Op-987P10)
The Pentagon, 5D772
Washington, DC 20350

P4-5/A7

452:KD:716:tam
78u452-883
6 November 1979

LIST 4
NAVMAT & NPRDC

NAVMAT

Naval Material Command
Program Administrator, Manpower,
Personnel, and Training
Code 08T244
1044 Crystal Plaza #5
Washington, DC 20360

Naval Material Command
Management Training Center
NMAT 09M32
Jefferson Plaza, Bldg #2, Rm 150
1421 Jefferson Davis Highway
Arlington, VA 20360

NPRDC

Commanding Officer (5 Copies)
Naval Personnel R&D Center
San Diego, CA 92152

Navy Personnel R&D Center
Washington Liaison Office
Building 200, 2N
Washington Navy Yard
Washington, DC 20374

P4-5/A9
Sequencial by State/City

452:KD:716:tam
78u452-883
6 November 1979

LIST 5
BUMED

Commanding Officer
Naval Health Research Center
San Diego, CA

Commanding Officer
Naval Submarine Medical
Research Laboratory
Naval Submarine Base
New London, Box 900
Groton, CT 06340

Director, Medical Service Corps
Bureau of Medicine and Surgery
Code 23
Department of the Navy
Washington, DC 20372

Naval Aerospace Medical
Research Lab
Naval Air Station
Pensacola, FL 32508

CDR Robert Kennedy
Officer in Charge
Naval Aerospace Medical
Research Laboratory Detachment
Box 2940, Michoud Station
New Orleans, LA 70129

National Naval Medical Center
Psychology Department
Bethesda, MD 20014

Commanding Officer
Navy Medical R&D Command
Bethesda, MD 20014

P4-5/A11

452:KD:716:tam
78u452-883
6 November 1979

LIST 6
NAVAL POSTGRADUATE SCHOOL

Naval Postgraduate School
ATTN: Dr. Richard S. Elster
Department of Administrative Sciences
Monterey, CA 93940

Naval Postgraduate School
ATTN: Professor John Senger
Operations Research and
Administrative Science
Monterey, CA 93940

Superintendent
Naval Postgraduate School
Code 1424
Monterey, CA 93940

P4-5/A13
Sequencial by State/City/FPO

452:KD:716:tam
78u452-883
6 November 1979

LIST 7
HRM

Officer in Charge
Human Resource Management Detachment
Naval Air Station
Alameda, CA 94591

Officer in Charge
Human Resource Management Detachment
Naval Submarine Base New London
P.O. Box 81
Groton, CT 06340

Officer in Charge
Human Resource Management Division
Naval Air Station
Mayport, FL 32228

Commanding Officer
Human Resource Management Center
Pearl Harbor, HI 96860

Commander in Chief
Human Resource Management Division
U.S. Pacific Fleet
Pearl Harbor, HI 96860

Officer in Charge
Human Resource Management Detachment
Naval Base
Charleston, SC 29408

Commanding Officer
Human Resource Management School
Naval Air Station Memphis
Millington, TN 38054

Human Resource Management School
Naval Air Station Memphis (96)
Millington, TN 38054

Commanding Officer
Human Resource Management Center
1300 Wilson Boulevard
Arlington, VA 22209

Commanding Officer
Human Resource Management Center
5621-23 Tidewater Drive
Norfolk, VA 23511

Commander in Chief
Human Resource Management Division
U.S. Atlantic Fleet
Norfolk, VA 23511

Officer in Charge
Human Resource Management Detachment
Naval Air Station Ehidbey Island
Oak Harbor, WA 98278

Commanding Officer
Human Resource Management Center
Box 23
FPO New York 09510

Commander in Chief
Human Resource Management Division
U.S. Naval Force Europe
FPO New York 09510

Officer in Charge
Human Resource Management Detachment
Box 60
FPO San Francisco 96651

Officer in Charge
Human Resource Management Detachment
COMNAVFORJAPAN
FPO Seattle 98762

P4-5/A16
Sequencial by State/City

452:KD:716:tam
78u452-883
6 November 1979

LIST 8
NAVY MISCELLANEOUS

Naval Amphibious School
Director, Human Resource
Training Department
Naval Amphibious Base
Little Creek
Norfolk, VA 23521

Chief of Naval Education
and Training (N-5)
ACOS Research and Program
Development
Naval Air Station
Pensacola, FL 32508

Naval Military Personnel Command (2 copies)
HRM Department (NMPC-6)
Washington, DC 20350

Navy Recruiting Command
Head, Research and Analysis Branch
Code 434, Room 8001
801 North Randolph Street
Arlington, VA 22203

Chief of Naval Technical Training
ATTN: Dr. Norman Kerr, Code 0161
NAS Memphis (75)
Millington, TN 38054

Naval Training Analysis
and Evaluation Group
Orlando, FL 32813

Commanding Officer
Naval Training Equipment Center
Orlando, FL 32813

Naval War College
Management Department
Newport, RI 02940

P4-5/A18

452:KD:716:tam
78u452-883
6 November 1979

LIST 9
USMC

Commandant of the Marine Corps
Headquarters, U.S. Marine Corps
Code MPI-20
Washington, DC 20380

Headquarters, U.S. Marine Corps
ATTN: Dr. A. L. Slafkosky,
Code RD-1
Washington, DC 20380

P4-5/A23
Sequencial by Agency

452:KD:716:tam
78u452-883
6 November 1979

LIST 11
OTHER FEDERAL GOVERNMENT

National Institute of Education
Educational Equity Grants Program
1200 19th Street, N.W.
Washington, DC 20208

National Institute of Education
ATTN: Dr. Fritz Muhlhauser
EOLC/SMO
1200 19th Street, N.W.
Washington, DC 20208

National Institute of Mental Health
Minority Group Mental Health Programs
Room 7 - 102
5600 Fishers Lane
Rockville, MD 20852

Office of Personnel Management
Organizational Psychology Branch
1900 E Street, NW.
Washington, DC 20415

Chief, Psychological Research Branch
ATTN: Mr. Richard Lanterman
U.S. Coast Guard (G-P-1/2/62)
Washington, DC 20590

Social and Developmental Psychology
Program
National Science Foundation
Washington, DC 20550

P4-5/A25
Sequential by State/City

452:KD:716:abc
78u452-883
6 November 1979

LIST 12
ARMY

Army Research Institute
Field Unit - Monterey
P.O. Box 5787
Monterey, CA 93940

Deputy Chief of Staff for
Personnel, Research Office
ATTN: DAPE-PBR
Washington, DC 20310

Headquarters, FORSCOM
ATTN: AFPR-HR
Ft. McPherson, GA 30330

Army Research Institute
Field Unit - Leavenworth
P.O. Box 3122
Fort Leavenworth, KS 66027

Technical Director (2 copies)
Army Research Institute
5001 Eisenhower Avenue
Alexandria, VA 22333

P4-5/A27
Sequential by State/City

452:KD:716:abc
78u452-883
6 November 1979

LIST 13
AIR FORCE

Air University Library/LSE 76-443
Maxwell AFB, AL 36112

AFOSR/NL (Dr. Fregly)
Building 410
Bolling AFB
Washington, DC 20332

Air Force Institute of Technology
AFIT/LSGR (Lt. Col. Umstot)
Wright-Patterson AFB
Dayton, OH 45433

Technical Director
AFHRL/ORS
Brooks AFB
San Antonio, TX 78235

AFMPC/DPMYP
(Research and Measurement Division)
Randolph AFB
Universal City, TX 78148

P4-5/A29
Sequential by State/City

452:KD:716:abc
78u452-883
6 November 1979

LIST 14
MISCELLANEOUS

Dr. Edwin A. Fleishman
Advanced Research Resources
Organization
Suite 900
433 East West Highway
Washington, DC 20014

Australian Embassy
Office of the Air Attache (S3B)
1601 Massachusetts Avenue, N.W.
Washington, DC 20036

British Embassy
Scientific Information Officer
Room 509
3100 Massachusetts Avenue, N.W.
Washington, DC 20008

Canadian Defense Liaison Staff,
Washington
ATTN: CDRD
2450 Massachusetts Avenue, N.W.
Washington, DC 20008

Mr. Mark T. Munger
McBer and Company
137 Newbury Street
Boston, MA 02116

HumRRO
ATTN: Library
300 North Washington Street
Alexandria, VA 22314

Mr. Luigi Petrullo
2431 North Edgewood Street
Arlington, VA 22207

Commandant, Royal Military
College of Canada
ATTN: Department of Military
Leadership and Management
Kingston, Ontario K7L 2W3

National Defence Headquarters
ATTN: DPAR
Ottawa, Ontario K1A 0K2

P4-5/B2
Sequencial by Principal Investigator

452:KD:716:tam
78u452-883
6 November 1979

LIST 15
CURRENT CONTRACTORS

Dr. Clayton P. Alderfer
School of Organization
and Management
Yale University
New Haven, CT 06520

Dr. H. Russell Bernard
Department of Sociology
and Anthropology
West Virginia University
Morgantown, WV 26506

Dr. Arthur Blaiwes
Human Factors Laboratory, Code N-71
Naval Training Equipment Center
Orlando, FL 32813

Dr. Michael Borus
Ohio State University
Columbus, OH 43210

Dr. Joseph V. Brady
The Johns Hopkins University
School of Medicine
Division of Behavioral Biology
Baltimore, MD 21205

Mr. Frank Clark
ADTECH/Advanced Technology, Inc.
7923 Jones Branch Drive, Suite 500
McLean, VA 22102

Dr. Stuart W. Cook
University of Colorado
Institute of Behavioral Science
Boulder, CO 80309

Mr. Gerald M. Croan
Westinghouse National Issues
Center
Suite 1111
2341 Jefferson Davis Highway
Arlington, VA 22202

Dr. Larry Cummings
University of Wisconsin-Madison
Graduate School of Business
Center for the Study of
Organizational Performance
1155 Observatory Drive
Madison, WI 53706

Dr. John P. French, Jr.
University of Michigan
Institute for Social Research
P.O. Box 1248
Ann Arbor, MI 48106

Dr. Paul S. Goodman
Graduate School of Industrial
Administration
Carnegie-Mellon University
Pittsburgh, PA 15213

Dr. J. Richard Hackman
School of Organization
and Management
Yale University
56 Hillhouse Avenue
New Haven, CT 06520

Dr. Asa G. Hilliard, Jr.
The Urban Institute for
Human Services, Inc.
P.O. Box 15068
San Francisco, CA 94115

Dr. Charles L. Hulin
Department of Psychology
University of Illinois
Champaign, IL 61820

Dr. Edna J. Hunter
United States International
University
School of Human Behavior
P.O. Box 26110
San Diego, CA 92126

Dr. Thomas M. Ostrom
The Ohio State University
Department of Psychology
116E Stadium
404C West 17th Avenue
Columbus, OH 43210

Dr. George E. Rowland
Temple University, The Merit Center
Ritter Annex, 9th Floor
College of Education
Philadephia, PA 19122

Dr. Irwin G. Sarason
University of Washington
Department of Psychology
Seattle, WA 98195

Dr. Benjamin Schneider
Michigan State University
East Lansing, MI 48824

Dr. Saul B. Sells
Texas Christian University
Institute of Behavioral Research
Drawer C
Fort Worth, TX 76129

Dr. H. Wallace Sinaiko
Program Director, Manpower Research
and Advisory Services
Smithsonian Institution
801 N. Pitt Street, Suite 120
Alexandria, VA 22314

Dr. Richard Steers
Graduate School of Management
and Business
University of Oregon
Eugene, OR 97403

Dr. Arthur Stone
State University of New York
at Stony Brook
Department of Psychology
Stony Brook, NY 11794

Dr. James R. Terborg
University of Houston
Department of Psychology
Houston, TX 77004

Drs. P. Thorndyke and M. Weiner
The Rand Corporation
1700 Main Street
Santa Monica, CA 90406

Dr. Howard M. Weiss
Purdue University
Department of Psychological
Sciences
West Lafayette, IN 47907

Dr. Philip G. Zimbardo
Stanford University
Department of Psychology
Stanford, CA 94305